MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

PSP 0101 – PROBLEM SOLVING AND PROGRAM DESIGN / PSP 0015 – PROBLEM SOLVING IN PROGRAMMING AND SYSTEM DESIGN

(Foundation in Information Technology)

12 OCTOBER 2016
2.30 p.m – 4.30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of **TWO** pages excluding the cover page.
2. Answer **ALL** questions.
3. Write your answers in the Answer Booklet.

Instructions: Answer **ALL** questions. Write your answers in the Answer Booklet.

QUESTION 1 [25 Marks]

a. Take the problem of how to travel to Europe with a budget of RM5000. State and apply the six problem solving steps to solve the problem.

(9 marks)

b. Several hundred programming languages exist today. Each language has its own rules for writing instructions.

i. What is a programming language?

(1 mark)

ii. Compare and contrast the **TWO (2)** levels of programming languages.

(4 marks)

c. Write the following equations in proper computer operators.

i. $3C + 2 = \frac{18H - 5U}{2} - 5H$

(4 marks)

ii. $D + 2A = 5S + \frac{3S + 4}{2}$

(3.5 marks)

iii. $\sqrt{A} = 8B - \frac{7}{4C - 3} + 2$

(3.5 marks)

QUESTION 2 [25 Marks]

a. You are asked to write a program that will ask a user to enter the number of Pokémon caught, and then read the initial value of Combat Power (CP) for each of the Pokémon. The program should also count and print the number of Pokémon that has CP greater than 20.

i. Complete the data dictionary below for the above problem. List of items are given. You only need to provide suitable variable names for the items and their data type.

Items	Variable Names	Data Types
Number of Pokémon		
Combat Power (CP)		
Number of Pokémon that has CP > 20		

(6 marks)

ii. Draw a flowchart for this program using the variable names from the data dictionary. Use automatic-counter loop and straight-through logic structure.

(13 marks)

b. Write an algorithm for a program using a negative logic structure that will display the word "**You win.**" if the value of the variable score is greater than 100, the word "**You lose.**" when the value of score is lesser than 100 and "**It's a tie.**" when the value is 100.

(6 marks)

QUESTION 3 [25 Marks]

a. What is wrong with these variables?
   i. AM
   ii. 4Types
   iii. Office'sAddress

(3 marks)

b. You are asked to write a program that will ask a user to enter a number. The program will then print the number in reverse and display the sum of the number.
For example, if the user entered 4321, the program will display the reverse of the number, which is 1234 and 10 as the sum of the number.

   i. Write an algorithm for this program. Use While loop structure.

(9 marks)

   ii. Draw a flowchart for this program. Use Repeat-Until loop structure.

(13 marks)

QUESTION 4 [25 Marks]

a. Ash wants to create his own version of PokéDex library program. This program will allow Ash to register the name of his 50 Pokémons by using an array. For a particular Pokémon, Ash has to enter its HP value, the Attack value and the Defense value. The program will calculate and display the total value and store that value in another array. After all his Pokémons are registered, the program will then display the name and the total value, of the Pokémon that has the highest total value. Write a complete algorithm for this program using a while loop for the array structure.

(19 marks)

b. Write an algorithm for a function definition that will ask the user to enter the temperature value in Celsius and another function definition to calculate and display the temperature in Fahrenheit.
Formula: Temperature in Fahrenheit = Temperature in Celsius x 9/5 + 32

(6 marks)

End of Paper